



# FOREST PRODUCTS

## Best Practices Technical Case Study

February 2002

OFFICE OF INDUSTRIAL TECHNOLOGIES

ENERGY EFFICIENCY AND RENEWABLE ENERGY, U.S. DEPARTMENT OF ENERGY

### BENEFITS

- Almost 14,000 million British thermal units (MMBtu) in annual energy savings
- \$31,000 annual savings in fuel costs
- Decreased energy losses resulting from boiler blowdown
- 6-month simple payback period

### APPLICATIONS

Typical blowdown flows range from 3 to 15 percent of a boiler's steam generating capacity. Any boiler with continuous surface blowdown exceeding 5 percent of the steam generation rate is a good candidate for blowdown waste heat recovery.

## Boiler Blowdown Heat Recovery Project Reduces Steam System Energy Losses at Augusta Newsprint

### Summary

The boiler blowdown process involves the periodic or continuous removal of water from a boiler to remove accumulated dissolved solids and/or sludges. During the process, water is discharged from the boiler to avoid the negative impacts of dissolved solids or impurities on boiler efficiency and maintenance. However, boiler blowdown wastes energy because the blown down liquid is at about the same temperature as the steam produced. Much of this heat can be recovered by routing the blown down liquid through a heat exchanger that preheats the boiler's makeup water. A boiler blowdown heat recovery project at Augusta Newsprint Company's Augusta, Georgia, mill will save almost \$31,000 annually in fuel costs.

### Plant Overview

The Augusta Newsprint mill is part of a joint partnership between Abitibi Consolidated and the Woodbridge Company, Ltd. The mill produces up to 440,000 metric tons of standard newsprint each year from southern pine and recycled newspaper and magazines. The mill has 2 paper machines and employs 380 workers.

Abitibi-Consolidated is a global leader in newsprint and uncoated groundwood papers with ownership interests in 27 paper mills in Canada, the United States, the United Kingdom, and Asia (including its 50 percent interest in Pan Asia Paper Company). The company also has ownership interest in 22 sawmills, 2 remanufacturing facilities, and a market pulp mill. Abitibi-Consolidated employs approximately 18,000 people and supplies products in nearly 100 countries.

### Project Overview

Blowdown is essential for continued operation of any steam boiler. However, blowdown represents an energy loss to the steam system. Although the blowdown rate at Augusta Newsprint is typical of most boilers, recovering the heat resident in the blowdown stream can save energy. Currently, the continuous boiler blowdown is routed to a flash tank where the pressure is reduced from 300 pounds per square inch gauge (psig) to approximately 55 psig. Flash steam produced in the pressure reduction process is piped into the deaerator to offset deaeration steam demand. This operation is currently saving the mill about \$10,000 per year in fuel costs. Additional energy can be recovered from the contaminated condensate exiting the flash vessel. The condensate dissipates energy that could be utilized to preheat makeup water. Figure 1 shows a schematic of the boiler blowdown system before and after heat exchanger installation.

### Project Implementation

As water evaporates within a boiler, dissolved solids in the water are left at the bottom of the boiler, resulting in buildup of sludge and scale. This buildup is alleviated by



